

distance down, a wavy appearance, corresponding with the ridges into which the surface is raised.

The stridulation is almost equally audible in water and air. As to its production by the living animal, Dr. Möbius states that it was heard by himself and Mr. Lloyd in the Hamburg Aquarium, and that it was made especially when the *Palinuri* were handled; he compares it to the sound produced by pressing the upper leather of a boot against a table-leg. I also heard the sound, and observed the movement of the antenna producing it, in a specimen brought alive to the Biological Laboratory of the School of Mines shortly after making my last communication.

As Dr. Möbius observes, the sound cannot be produced in spirit specimens. These can, however, be again rendered vocal by soaking them for a longer or shorter time in water.

#### EXPLANATION OF PLATE XXX.

- Fig. 1. The parts concerned in the formation of the stridulating organ, seen from the right side (nat. size): *os*, ophthalmic sternum; *as*, antennular sternum; *r*, one of the projecting ridges which bound it anteriorly; *g*, the groove on its lateral surface; *s*, the smooth surface between the groove and the ridge, against which the pad on the antenna rubs; *ar'*, articular cavity for the right antennule; *ar*, articular cavity for the right antenna; *b*, basicerite, and *i*, ischiocerite of the left antenna; *f*, the flap.
- Fig. 2. The same, seen from above (nat. size). Letters as before.
- Fig. 3. The basicerite and ischiocerite of the left antenna, seen from the inner side (nat. size); the dotted line shows the extent of the uncalcified portion of the basicerite: *p*, the ridged pad; *t*, the guiding tubercle. Other letters as before.
- Fig. 4. The pad, with the guiding tubercle and part of the flap ( $\times 4$ ); the arrow shows the direction taken by the hairs on the inner surface of the flap: *ii*, inferior or attached edge of pad; *xy*, line showing direction of movement. Other letters as before.
- Fig. 5. Diagrammatic cross section of the stridulating apparatus, showing the condition of the parts, (A) when the antenna is moving downwards, (B) when it is moving upwards. The arrows show the direction of movement. *b* upper and *b'* lower lip of the uncalcified slit in the antenna. Other letters as before.
- Fig. 6. Microscopical section of the pad, taken across the ridges. Drawn under a  $\frac{1}{8}$ -inch objective.

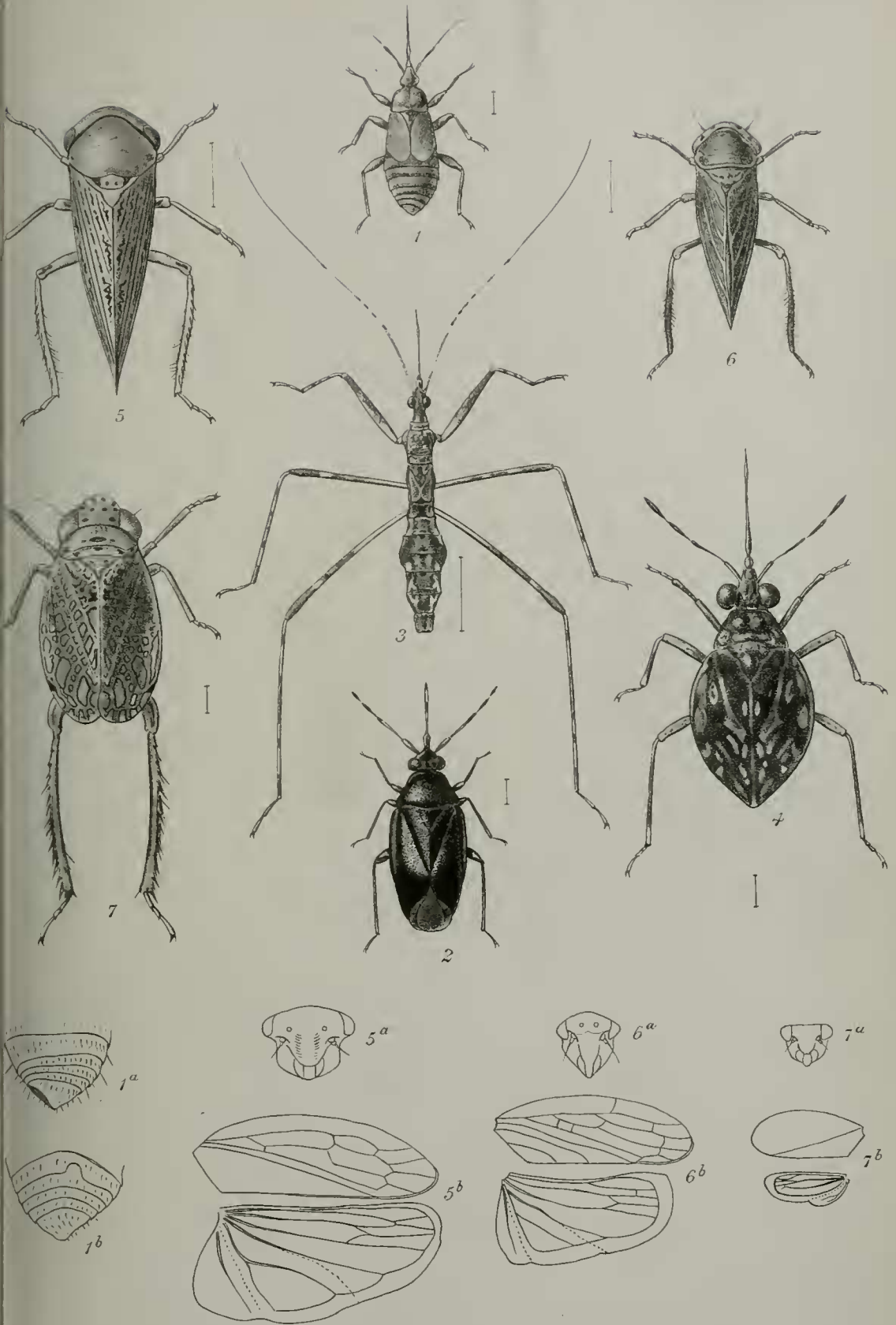
## 2. Contributions to a Knowledge of the Hemipterous Fauna of St. Helena, and Speculations on its Origin. By F. BUCHANAN WHITE, M.D., F.L.S.

[Received April 8, 1878.]

(Plate XXXI.)

#### PART I. SPECULATIVE.

“The extreme isolation of St. Helena—which is nearly 1200 miles from the nearest point of the African continent, 1800 from that of South America, and about 700 from even the small and barren island





of Ascension—gives it a degree of importance which it would not otherwise possess; for about the faunas of remote islands cluster, in an especial manner, a variety of problems which, although they may never be absolutely solved, may yet be brought, by a series of carefully conducted observations, within the sphere of discussion, and be made to throw some additional light, however faint, on the general questions of geographical zoology. From whatever point of view we look at them,—and there are many which at once suggest themselves along the distinct, but ultimately converging, lines of thought,—the statistics of an oceanic rock, far removed from the ordinary effects of immigration and change, and bearing more or less of the impress which was stamped upon it by its aboriginal forms of life, have an interest about them which it is scarcely possible to overrate. How the organisms, as we now see them, came to occupy their present areas of distribution,—to what extent they are, or seem to be, ‘related’ to those of the nearest mainland,—whether there is evidence for believing that they have changed to any considerable extent, in their outward configuration, from the types of which they may be presumed by some naturalists to be the remote descendants,—or whether there is reason to suspect that the Hand, which originally placed them where they are, adapted each separate species to the conditions which it was destined to fulfil, subjecting one and all of them to a law of permanence under which they can never very materially alter,—are but a tithe of the questions which, if not capable of being answered positively, we may at least ventilate and probe, not altogether without profit, in even a small treatise like the present one; for it cannot be too carefully borne in mind that, within the limited sphere where mere speculation (as such) seems likely to have any permanent value, it is to facts, and not to theories, that we must ultimately appeal”<sup>1</sup>.

The sentences which I have quoted form, I think it will be admitted, an appropriate introduction to a paper descriptive of one of the last collections of insects ever made by their eminent and much regretted writer; but, before proceeding to the special subject of this memoir, I wish to devote a few words to a consideration of the problems suggested by Mr. Wollaston, not, however, with much hope that I shall be able to throw any fresh light on a matter that has puzzled many abler naturalists.

Of what is actually and satisfactorily known regarding the indigenous animals and plants of St. Helena, the following is a brief epitome:—

There are no terrestrial Mammalia, nor any land or freshwater Amphibia, Reptilia, or Fishes.

Of birds there are at least eight indigenous sea species and one land bird (the *Ægialites sanctæ-helenæ*, Harting, very closely allied to the African *Æ. varius*, Vieill.), which is peculiar to the island.

As regards the sea-fishes, Dr. Günther has, in the ‘Proceedings’ of this Society<sup>2</sup>, given an account of the collections made by Mr. Melliss

<sup>1</sup> T. V. Wollaston, *Coleoptera Sanctæ-Helenæ*, pp. vii & viii.

<sup>2</sup> March 1868 and April 1869.



These included 65 species, of which 17 are peculiar to St. Helena, 31 others, being inhabitants of shallow water, are probably indigenous (their exotic distribution being for the most part on the American and African coasts), and nearly 20 are deep-water species and common in the tropical seas. Much, however, still remains to be done, not only amongst the fishes of St. Helena, but in the other groups of marine animals.

The land mollusks seem to have been more looked after than the marine species. Of the former, 4 (or, including 2 unnamed slugs<sup>1</sup>, 6) living, and 20 dead and subfossil native species have been recorded.

Amongst the Insecta, the order Coleoptera has received most attention; and, owing to Mr. Wollaston's researches, the indigenous species of that order are at least fairly, though, perhaps, not entirely, known. Of the 203 species that have been found in the island, 57 have without any doubt been accidentally introduced; 17 others may have been introduced; and the remaining 129 Mr. Wollaston considered to be the descendants of the "autochthones of the soil," and, with one exception, absolutely peculiar to St. Helena.

Of the Hemiptera a small, but probably fairly representative collection was made by Mr. Wollaston. In it I find 30 determinable species; and 2 or 3 more have been recorded from the island. Of the total number 5 have certainly, and 1 has, probably, been introduced, leaving 26, which, with one exception, seem to be peculiar.

The only other group of animals of which there is (as far as I am aware) any satisfactory record is that of the Spiders, Mr. Melliss's collections<sup>2</sup> of which have been reported on by the Rev. O. P. Cambridge. Out of a total of 40, 18 species seem to be indigenous, and 22 probably introduced.

We will now glance at the flora. The great mass of the present flora consists of introduced species; but of the original flora, as far as it can now be traced<sup>3</sup>, 40 flowering plants are absolutely peculiar, and the 5 other probable natives are species of wide-spread tropical distribution. Of the 26 ferns, 10 are peculiar. Adding to these the other cryptogamic plants, so far as they are known, we have a total of 77 plants<sup>4</sup> supposed to be absolutely peculiar to the island.

"Whence and by what means came this very peculiar fauna and flora?" is a question that has given rise to more than one suggestion or theory.

To begin with the flora, Sir J. D. Hooker<sup>5</sup>, after alluding to the causes that have assisted in destroying the ancient flora, and indicating the means by which it is possible to distinguish the aboriginal from the introduced plants, proceeds to say:—"From such fragmentary data it is difficult to form any exact conclusions as to the affinities of this flora; but I think it may be safely regarded as an

<sup>1</sup> J. C. Melliss, 'St. Helena,' p. 118.

<sup>2</sup> Proc. Zool. Soc. Nov. 1869 and March 1873.

<sup>3</sup> Sir J. D. Hooker, "Lecture upon Insular Floras," Brit. Assoc. Adv. of Sci. 1866.

<sup>4</sup> Melliss, *l. c.* p. 224.

<sup>5</sup> 'Lecture on Insular Floras,' quoted in Melliss, *l. c.* p. 223, &c.

African one, and characteristic of Southern extra-tropical Africa. The genera *Phylica*, *Pelargonium*, *Mesembryanthemum*, *Osteospermum*, and *Wahlenbergia* are eminently characteristic of Southern extra-tropical Africa; and I find amongst the others scarcely any indication of an American parentage, except a plant referred to *Physalis*<sup>1</sup>. The Ferns tell the same tale: of 26 species, 10 are absolutely peculiar; all the rest are African, though some are also Indian and American. The botany of St. Helena is thus most interesting; it resembles none other in the peculiarity of its indigenous vegetation, in the great rarity of the plants of other countries, or in the number of species that have actually disappeared within the memory of living man . . . . Probably 100 St.-Helena plants have thus disappeared from the *Systema Naturæ* since the first introduction of goats on the island. Every one of these was a link in the chain of created beings, which contained within itself evidence of the affinities of other species, both living and extinct, but which evidence is now irrecoverably lost. If such be the fate of organisms that lived in our day, what folly it is to found theories on the assumed perfection of a geological record which has witnessed revolutions in the vegetation of the globe to which that of the flora of St. Helena is as nothing!"

Mr. Melliss, whose interesting work on St. Helena I have had frequent occasion to refer to, says<sup>2</sup>:—"Other theories may be appealed to in order to account for the presence and position of this wonderfully curious little flora. Continental land at one time spreading over the South Atlantic Ocean, with its own peculiar flora and fauna, has been started as a plausible theory; but the geological investigation of St. Helena forbids us to look upon it as a remaining portion of some disappearing continent to which the last vestige of a flora, still struggling for existence, may be clinging; and the great depth of ocean<sup>3</sup> around it also seems to deny the possibility of its connexion at any time with either African or American land. Still we cannot tell what geological changes, hundreds or even thousands of centuries may have witnessed in that portion of the globe, leaving, perhaps, this unique little floral remnant, now fast disappearing, as almost the only record of what once was. So far, therefore, the manner in which this once incandescent mass first received its flora, whether by the agency of birds or atmospheric and oceanic currents, or direct from that Hand by which all things were created, still remains unfathomed."

Of the class Arachnida, Mr. Melliss<sup>4</sup> states:—"Mr. Cambridge says, in reference to the character of this portion of the island fauna, after his final examination of the several collections, that 'the European stamp observed upon in regard to the spiders of the former collection is thus equally marked in those now recorded and described.' It is worthy of note that the native Spiders are, almost as a rule, least

<sup>1</sup> Subsequently referred to a new genus, *Mellissia*, Hk. f.

<sup>2</sup> P. 225.

<sup>3</sup> "St. Helena is said to be separated from the continents of Africa and America by a depth nowhere less than 12,000 feet."

<sup>4</sup> *L. c.* p. 206.

abundant now in the island ; in each case where I met with only one specimen, it turned out to be a new species. It is therefore not at all improbable that, like the native plants and the Snails, which we know are fast disappearing, some having gone entirely, the Spiders, for some cause or other, are also yielding up their native land to foreign invaders."

Mr. Wollaston, whose painstaking investigations of the faunas of the North Atlantic islands, and careful study of the Coleoptera of St. Helena especially qualified him to give an opinion on this subject, thus writes regarding the Beetles<sup>1</sup>:—"The whole of the 129 species to which I have just alluded are, with a single exception (the *Chilomenes lunata*, Fab.), absolutely *peculiar* to St. Helena ; so that the question of geographical distribution would seem to be well-nigh 'nipped in the bud.' Moreover, from all that I know of the South-African Coleoptera . . . it has almost nothing in common with these 129 aboriginal St.-Helenians, which stand out singly, as it were, and alone, related more or less *inter se*, but unrelated for the most part, to any recognized continental forms. It is true that two of the most significant of the Rhynchophorous types—namely, *Nesiotes* (of the *Tanyrhynchidæ*) and *Acarodes* (of the *Anthribiidae*)—are allied conspicuously to *Echinosoma* and *Xenorchestes* of the Madeiran archipelago ; but if any more successful generalizer than myself can develop much from these points of quasi-contact, he is quite welcome to the result. So far as I can understand the evidence before me, any unprejudiced inquiry into the 'origin' (as usually understood by that term) of these St.-Helenian Coleoptera, does not elicit, in reply, so much as even an echo ; for not only are they *endemic* (in the strictest sense of the word), but an overwhelming majority of them are attached (or were so originally) to trees and shrubs which would seem to exist nowhere in the world except on this remote rock, 1200 miles from the nearest point of the African coast, surrounded by an all but unfathomable ocean, and which has every appearance of having been piled up by successive eruptions into a basaltic mass at no period *very* considerably larger than that which we now see. 'Whence then, came its fauna and flora,' are enigmas which I cannot presume to answer on any known principles of derivation and descent. To a mind which, like my own, can accept the doctrine of creative acts as not necessarily 'unphilosophical,' the mysteries, however great, become at least conceivable ; but those which are not able to do this may perhaps succeed in elaborating some special theory of their own, which, even if it does not satisfy all the requirements of the problem, may at least prove convincing to themselves. The St.-Helena fauna cannot, I think, be said to have had much light yet thrown upon it as regards its actual 'origin' (except, perhaps, in so far as my individual opinions on the subject may be accepted by others who are predisposed to receive them) ; but its *primitive* (or at all events remote) *state* is another matter, and appears to be capable of some real elucidation from the facts to which we have access."

<sup>1</sup> Coleoptera Sanctæ-Helenæ, p. xix.



Regarding the Mollusca, the late Edward Forbes thought that both the terrestrial and marine species dimly indicated a closer geographical relationship between the African and American continents than now maintains. "The marine mollusks would seem to point to the submergence of a tract of land probably linking Africa and South America before the elevation of St. Helena. Along the sea-coast of such a tract of land, the creatures common to the West Indies and Senegal might have been diffused." Commenting on this suggestion, Mr. Gwyn Jeffreys<sup>1</sup> writes, "I am not quite satisfied with this hypothesis, and I believe that more information is needed to support it. . . . . A few of the marine shells are Mediterranean, while the greater number are well-known inhabitants of the Indian Ocean and the West Indies; all these may have originated anywhere. But it must be borne in mind that St. Helena is separated from Africa and South America in every direction and by very deep water, which is nowhere less than 2000 fathoms or 12,000 feet. It therefore seems scarcely probable that such an abyssal and extensive tract of the sea-bed could have been dry land or 'sea-coast' in a geologically recent period, so as thus to account for the diffusion of littoral species such as *Mytilus edulis*, *M. crenatus*, and *Littorina striata*. I should be rather inclined to attribute the present distribution of the marine fauna of St. Helena (not to a supposed continuity of land between Africa and South America in that or any other direction, but) to the action and influence of the great Agulhas current, which issues from the Indian Ocean and flows round the Cape of Good Hope northwards towards St. Helena, and thence past Ascension to the West Indies."

Mr. Andrew Murray, whose loss to science we have had so recently to deplore, has given<sup>2</sup> a considerable amount of attention to the origin of the fauna of St. Helena. After stating his conviction that there at one time existed a land communication, now at the bottom of the Atlantic, between the northern and southern hemispheres, and arguing that there are only three great Coleopterous faunæ or stirpes (the Indo-African, the Brazilian, and what he calls, for want of a better name, "the microtypal stirps"), he proceeds to say:—"St. Helena, that great puzzle of naturalists, is a crucial test to my hypothesis of a communication between the northern and southern hemispheres by an Atlantic continent; if that link snaps, the whole chain will fall to the ground. . . . . I say that its fauna is certainly microtypal, and, if so, almost necessarily a branch of the Atlantic type of that stirps; there is nothing else microtypal for it to be attached to. Some three years ago Dr. Hooker gave an admirable Lecture on Oceanic Islands, in which he discussed the origin of the flora of St. Helena, and on the whole seemed inclined to refer it to Africa. More in the spirit of 'audi alteram partem' than from any settled conviction of my own, I wrote a reply, in which I gave some reasons for thinking that it might more probably have been

<sup>1</sup> Ann. & Mag. Nat. Hist. April 1872; Melliss, *l. c.* p. 114.

<sup>2</sup> "On the Geographical Relations of the Chief Coleopterous Faunæ," Journ. Linn. Soc. xi. no. 49.

originally connected with and peopled from Europe, although, also, possibly connected at some period with Africa. More mature consideration and subsequent researches have confirmed my opinion." Mr. Murray then goes on to point out how the fauna (as then known) supported his conclusions as to its European origin. Of the flora he writes:—"The general result which I draw from the whole flora is, that we have here a compound flora, certainly two deep, possibly three deep. We have, in the first place, I believe, a genuine natural Atlantic (that is, European) flora; for in the face of the decided testimony given by the fauna, I cannot accept Dr. Roxburgh's conclusions as to the supposed introduction and naturalization of every species having a European habitat. If they can be proved to have been introduced, good and well; but I object to take the thing to be proved as part of the proof. And in the next place, I believe, we have the traces of an older African flora (why I call it older I will explain when I come to speak of an ancient connexion between Patagonia and South Africa); and I believe that both are due to actual continuity, however circuitous or interrupted, with the respective countries the impress of whose floras they bear. . . . .

"Before leaving St. Helena, I have just one other argument to adduce in support of its former connexion with the other Atlantic Islands; and that is, the fact (which has only recently been ascertained, or, at any rate, only recently laid down in our maps) that there is a long band of elevated submarine bottom running north from St. Helena to the Cape-Verd Islands, and embracing in its course Ascension Island and the shoal-ground on the equator."

Subsequently Mr. Murray explains how, in his opinion, there might have been a land connexion between Patagonia and the Cape of Good Hope, "sending out perhaps arms to Tristan d'Acunha and St. Helena, which, however, have the option of what, I think, is a still more ancient union in another direction," namely from Brazil, rounding, but not touching, the Cape of Good Hope to Madagascar. To one or other of these connexions (presumably the first) are owing "the score or so of plants left on St. Helena and Tristan d'Acunha, and a slight sprinkling of microtypal forms which still subsist at the Cape."

I have now given the gist of what I have been able to find suggested as to the origin of the flora and fauna of St. Helena, and, before explaining my own views, will briefly recapitulate.

The facts may be thus stated:—

1. A volcanic island of very ancient origin, very remote from continental land or other islands, and surrounded by an ocean 12,000 feet in depth on almost every side.

2. A terrestrial fauna and flora, the very great majority of the indigenous species comprising which are peculiar, and a marine fauna with a large proportion of peculiar species.

The various theories suggested for the peopling of this island arrange themselves as follows:—

1. Special creation and no special affinities.
2. Land connexion with both Africa and America.



3. As regards the fauna and part of the flora—land connexion from the north, and European affinities.

As regards the peculiar part of the flora—land connexion from the south uniting Africa and America.

4. As regards the marine Mollusca, diffusion by means of the Agulhas current from the south.

5. Affinities of the flora somewhat suggestive of extratropical Southern Africa.

Against the first of these theories (special creation) it may be argued that such a method is contrary to, as far as we can judge, the whole scheme of creation, and that, while many things can be urged against it, there is nothing to support such a belief.

Against the theories which necessitate the existence in time past of a land communication with Africa or America, or both, all the known facts militate. The non-existence in St. Helena of Amphibia and terrestrial mammals<sup>1</sup>, the large number of peculiar species, as well as the great depth of the surrounding sea, afford reasons for thinking that it is extremely improbable that the island was ever connected with either of these continents.

The other theories will be alluded to in giving my own.

A careful consideration of all the known facts leads me to believe that two, if not three, epochs in the colonization of the island may be distinguished, and that the great bulk of the inhabitants came from the north, but not by means of a continuity of land.

The first of these epochs, or that in which the earliest inhabitants of St. Helena reached the island, occurred possibly early in the last glacial period, but perhaps and (even probably) in Miocene times; and the reasons for thinking so, as well as for believing that the colonists came from the north, I will now try to prove.

In the first place, all the peculiar species belong either to peculiar genera, or to genera which, if they have not yet been found in Miocene formations, are (like the genera which have been found) so widely distributed that it seems more than probable that they were Miocene genera. The nearest relations of the peculiar genera are also of this character.

To begin with the terrestrial fauna, viz. the Mollusca, the Coleoptera, the Hemiptera, and the Arachnida.

The molluscan genera are *Succinea* (with a peculiar subgenus), *Helix*, *Bulimus*, and *Achatina*—genera which all date from the Eocene, and which are all very widely distributed.

The Coleoptera, being more numerous, are not so easily disposed of. Taking Mr. Wollaston's estimate of what are aboriginal species, we have 40 genera, of which 25 are peculiar. The remaining 15 genera include 10 actually known as Miocene, 4 of wide distribution and therefore probably Miocene, and 1 which is only known from Madeira in addition to St. Helena. Of the 25 peculiar genera, 21 at least belong to families or subfamilies which are Miocene, and 3 are allied to very widely-spread genera.

The Hemiptera are not many in number, nor is our information

<sup>1</sup> C. Darwin, 'Origin of Species,' 6th edition, p. 350.

about their geographical distribution so complete as it is for the Coleoptera. The total number of genera is 21, of which 8 are peculiar. Of the 13 genera not peculiar, 4 have Miocene affinities, 3 are very widely spread, and 6 are more or less widely distributed, but there is a want of information regarding them. Of the 8 peculiar genera, 4 have Miocene affinities, and 3 have relations of very wide distribution, the remaining genus having African affinities.

As the Hemiptera are specially treated of in the second part of this paper, I need not discuss them at length just now.

The supposed indigenous Arachnida belong to 13 genera, none of which are peculiar. All the genera are widely distributed—many very widely, reaching Australia and New Zealand. One genus is Miocene, and 5 belong to families known as Miocene.

As already mentioned, there are no freshwater fishes; and even if the sea-fishes were more extensively known than they are, the continuity of the medium in which they live affords so many facilities for the distribution of the species, that it is not very easy to learn much from them. Still we find that both the geological age and the present distribution of the 7 families to which the 17 peculiar fishes belong are very great, and that, on the whole, they seem to indicate the same Palæarctic origin as the other classes.

The flora alone remains to be considered. The extratropical South-African affinities of the flowering plants have been pointed out by Sir J. D. Hooker. As to the cryptogams, many have a very wide distribution, either as species or genera; and while many, from their geological age, have had ample time for diffusion, it would seem that even at the present day cryptogams have greater facilities for dispersion than phanerogamic plants. In addition, more information as to their geographical distribution is necessary before they can be considered to throw very much light on the subject we are considering.

The facts connected with the aboriginal fauna to which I have just called attention seem to indicate that its probable origin was somewhat after this manner:—

1. That the first settlers arrived at a very early date, and that no very great additions, from outside the island, were made to them from that period up to the time when man's agency came into force.

2. That they did not arrive in a body, but that the colonization of the island was spread over a considerable period.

3. That the road by which they came was not on a continuous land-surface.

4. That the colonists came from the Palæarctic region.

I shall now endeavour to prove these statements seriatim.

1. *The first settlers arrived at a very early date.*

As, thanks to Mr. Wollaston, the Coleoptera form the best-known group of the animals of the island, we will see how they support my argument. If the colonization did not take place at a very early

period, there ought to be some genera represented (amongst those which are not absolutely peculiar) which are of comparatively recent origin; but the facts are that out of 15 genera not peculiar, 10 are actually Miocene<sup>1</sup>, and 4 others are of such wide distribution that, though they have not yet been detected in Miocene formations, they must be of Miocene age. The remaining genus may have either been a later importation, or, what is as likely, originated *en route*. The 25 peculiar genera are all, as I have stated, allied to Miocene, or probably Miocene, families; and their great number is an additional argument in favour of the long isolation and consequent early settlement of St. Helena.

The Hemiptera (so far as our defective knowledge of their geological and geographical distribution goes) tell the same tale. Of the 13 genera not peculiar, 4 have at least actual, and 3 probable, Miocene affinities; of the remaining 6 we know less. Of the 8 peculiar genera, 4 have actual and 3 probable Miocene affinities.

Again, we learn the same thing from the Arachnida. The 13 genera are all probably Miocene, 1 being and 5 belonging to families known as Miocene.

The 4 genera of terrestrial Mollusca are all Eocene; and one has a peculiar subgenus. These quite support the evidence learnt from the insects.

2. *The aboriginal fauna did not arrive all at once, but the colonization was spread over a lengthened period.*

This is a question into which I need not enter at length, but merely refer to Mr. Darwin's remarks on the inhabitants of oceanic islands<sup>2</sup>, and point out how the great number of peculiar species in St. Helena bears out his arguments. If all the inhabitants had arrived simultaneously, their mutual relationships would have been undisturbed, and the liability to modification consequently lessened by the absence of new forms of competition. Spread over a lengthened period, the colonization of a new land must inevitably upset the preexisting relationships of the colonists, and result in, as we see in St. Helena, many modifications of form.

3. *The road by which the colonists travelled was not on a continuous land-surface.*

This, too, is a question not requiring lengthy consideration here.

The absence of Batrachians and terrestrial mammals is quite in accordance with what Mr. Darwin has shown is the rule in oceanic islands; and, moreover, the argument in favour of gradual colonization also supports that of want of continuity of land-surface.

4. *The colonists came from the Palæarctic Region.*

This is capable of consideration under two headings:—1, the Palæ-

<sup>1</sup> There seems reason to believe that many genera of insects known as Miocene are also of Eocene age.

<sup>2</sup> *L. c.* p. 348.

arctic character of the fauna ; and, 2, the road by which it came ; but these will be most conveniently treated of together.

St. Helena is, as has been already said, a small island of ancient volcanic origin, very distant from any continent, and surrounded by very deep sea. The nearest land is Ascension Island, 698 miles north-west of St. Helena ; and nearly double that distance north of Ascension lie the Cape-Verd Islands. Improbable as it may seem to many, this is the route by which, I think, the aboriginal fauna reached St. Helena.

But it is not necessary to believe that the colonists crossed such wide stretches of ocean. "Stepping-stones," in the shape of other islands, doubtless existed ; and, in fact, we can trace the remains of some of them. For, deep as is the ocean round St. Helena, a somewhat shallower sea (still, however, very deep) extends between it and Ascension, and is continued north to the equator, where a yet shallower place is to be found, not more than 700 or 800 miles from the Cape-Verd Islands. It seems not only possible but extremely probable that in this equatorial shoal we have the wreck of an island ; and as the line indicated coincides with an area of depression as well as of volcanic action (extending more or less from Iceland to Trinidad and Tristan d'Acunha), there is no reason why other islands should not have existed, of which (as Mr. Darwin says) "not a wreck now remains."

It may be argued against this theory that, if it were probable, then Ascension should have a larger native fauna than it at present possesses ; but, as far as I can learn, the present Ascension is of comparatively recent origin, and supplies an argument in favour of my view that volcanic action has made great alterations in the supposed line of route. If (as seems probable) the present Ascension is comparatively recent, it by no means follows that an older island did not once occupy its place and possess a larger fauna than its successor, which has been possibly colonized from St. Helena. (I may here call attention to Mr. Melliss's remarks<sup>1</sup>, that *Sterna fuliginosa* does not remain all the year at St. Helena, but probably migrates to Ascension, returning to St. Helena at the end of the year. If there is any thing in Mr. Wallace's theory that the lines of migration of birds often coincide with ancient land-connexion<sup>2</sup>—which, however, Colonel Drummond Hay has shown<sup>3</sup> to be by no means invariably the case—then this would seem to point at some closer connexion in former times between St. Helena and Ascension.)

But even assuming that the supposed requisite intermediate islands existed, it is necessary to find some means by which the tide of emigration was induced to flow towards St. Helena.

At the present time both the ocean-currents and the prevailing winds would tend to lessen, if not, as seems more probable, to entirely prevent, emigration in that direction, even if the "stepping-stone" islands still existed. The S.E. trade is the prevailing wind ; and the great Agulhas current sweeps past St. Helena from the

<sup>1</sup> *L.c.* p. 98.

<sup>2</sup> *Geographical Distribution of Animals*, i. p. 22.

<sup>3</sup> *Scottish Naturalist*. 1877-78.



Cape of Good Hope towards the West Indies, and, while effectually stopping any emigration from the north, does, in fact, occasionally (as we shall presently see) bring new inhabitants to the island from the south. Given, therefore, any cause by which the present direction of the winds and currents could be reversed, the probability of colonization from the north would be immensely increased. But when we find, as in reality we do, that one and the same cause not only reversed the winds and currents, but induced an immense tide of migration to flow from the north to the south, then it seems pretty evident whence St. Helena derived its fauna, if that fauna be, as I shall presently show it is, of a Palæarctic character.

The cause I have alluded to is one or other of the northern glacial periods, either the last or one in Miocene times. That during such a period the equatorial currents were reversed, Dr. Croll<sup>1</sup> has shown there are very good reasons for believing; and as regards the flow of migration southwards at the same time, we know that that must necessarily have taken place<sup>2</sup>.

But perhaps it may be argued that similar reasons to those which I have advanced to show that the colonization was from the north may be brought forward to prove, with as great probability, that the colonization was from the south. We have seen, however, that the present configuration of the sea-bottom is much more in favour of the northern than of the southern theory; we, know, moreover, that emigration from the north has always been more powerful than from the south; and I will try to show that the character of the fauna is in favour of the northern view.

It is now generally admitted that the Cape-Verd Islands belong to the Palæarctic region, and have derived their fauna through the Canaries and Madeira. If, then, St. Helena got its fauna by that route from the north, the affinities should be Palæarctic, and the imprint of the fauna of the route should be more or less discernible. That this imprint is not more manifest is explained, I think, by reason that the route was interrupted at the St.-Helena end, and that island cut off, at a very remote date; the other islands being less inaccessible, have had their faunas altered very considerably by later importations, and their original settlers less modified by the fact that the colonization was more *en masse* and that fresh blood has tended to preserve the old types.

Mr. Wollaston, whose opinion must be received with the greatest respect, arrived at the conclusion, as I have already mentioned, that St. Helena had little in common with the faunas of the Atlantic archipelagos to the north; but even he admits that "two of the most significant of the Rhynchophorous types—namely *Nesiotes* (of the *Tanyrhynchidæ*) and *Acarodes* (of the *Anthribiidæ*)—are allied conspicuously to *Echinosoma* and *Xenorchestes* of the Madeiran archipelago."

Most of the coleopterous genera not peculiar to St. Helena have already been cited in evidence of the very ancient peopling of the

<sup>1</sup> Quoted in Dr. J. Geikie's 'Great Ice Age,' p. 107, &c.

<sup>2</sup> Darwin, *l. c.* p. 339, &c.



island. Most of these genera, in addition to being Miocene and of very wide distribution, are characteristic Palæarctic genera at the present time. Amongst the peculiar genera many have their affinities (and, hence, probable ancestry) with Palæarctic genera; while in the North-Atlantic islands there seems to me to be more evidence of alliance with St. Helena than Mr. Wollaston was inclined to admit. Mr. Murray (whose line of migration, in part, at least, coincides, as will have been noticed, with mine—he arguing, however, for continuity of land) was decidedly in favour of affinity with the North-Atlantic islands; and his knowledge of Coleoptera was, it must be allowed, so extensive as to require his opinion to be received with attention. It is true that since he wrote on the subject our knowledge of the St.-Helenian Coleoptera has been immensely increased; but so far as I can see, nothing has been found to invalidate (but rather to increase) the argument in favour of such alliance. Taking Mr. Murray's abstract<sup>1</sup> of the Coleoptera of the North-Atlantic islands, we have in Madeira 266 endemic species against 120 aboriginal European species, the endemic species being all akin to European forms. Then in the Canaries we find that, out of a total of 930, 224 species are identical with Madeiran, the peculiar characters of the Madeiran fauna being there in force. Next come the Cape-Verd Islands, of which Mr. Wollaston says, "Our recent explorations in the Cape-Verdes have shown their coleopterous population to be so far more than I had anticipated on the Canarian and Madeiran type, that I am any thing but certain that it would not be more natural to regard the *whole* of these Atlantic islands as characterized by a *single* fauna unmistakably the same, even whilst necessarily differing as to many of its exact details (and through the fact of mere *distance*) in the more widely separated groups."

In fact we find in the three archipelagos just what might have been expected. As we move southwards the same general character of the fauna is found to be present, but the particulars gradually alter. And this, it seems to me, is apparent even when St. Helena is reached. Making due allowance for its remoteness and different latitude, the character of the fauna is the same, though the details are very considerably altered. For example, in Madeira we have the Heteromorous genera *Hadrus* and *Hegeter*, with 3 and 1 species respectively; in the Canaries *Hadrus* has vanished, but *Hegeter* has no less than 19 species; in the Cape-Verds *Hegeter* has almost disappeared, having but a single species, but its place has been taken by a new genus, *Oxycara*, with 10 species; in St. Helena all these genera have vanished, but are represented by two new and allied genera—*Hadrodes* and *Tarphiophasis*, regarding the first of which Mr. Wollaston remarks that it has a good deal in common with the Madeiran *Hadrus*. *Tarphiophasis* too seems evidently a development of *Hadrodes*, just as the latter is of *Hadrus*. Then, again, Mr. Wollaston remarks of the St.-Helenian *Opatrum hadroides* that it is closely allied to species from the Cape-Verd, Canarian, and Madeiran archipelagos, and is even more akin to one, and probably

<sup>1</sup> L. c. p. 12 &c.

identical with another, Cape-of-Good-Hope species—the significance of which latter facts will be alluded to in connexion with the flora. Again, the genus *Euxestus* was known from Madeira only, till Mr. Wollaston discovered another species in St. Helena.

But as the most remarkable fact in the coleopterous fauna of St. Helena is the enormous preponderance of *Cossonidæ*—more than a quarter of the endemic species belonging to that family—which seem to find there their metropolis, we ought, if the line of migration is by Madeira &c., to find in the latter a significant development of this family. And so we do. “In the Madeiran and Canarian groups,” writes Mr. Wollaston<sup>1</sup>, “there is scarcely any fact [the insular-loving nature of the *Cossonidæ*] more distinctly observable—where every detached rock is tenanted by some one representative, or more, of this particular department. Nor are trees and shrubs (which seldom flourish in localities thus weather-beaten and exposed) by any means essential for their support, the pithy stems of the ordinary plants being amply sufficient to sustain them; and I have frequently found the stalks of dead thistles and Umbelliferæ to be perforated through and through by their ravages.” Mr. Wollaston found 19 species in Madeira and 14 in the Canaries. The *Anthribiidae* (which include the next largest number of endemic species in St. Helena) indicate a like derivation; but enough has, I think, been brought forward to show both the Palæarctic origin and probable route of migration of the Coleoptera of St. Helena.

The Hemiptera are not fitted (from the reasons already given) to teach us so much as the Coleoptera; but 12 at least, if not all, of the 13 non-peculiar genera are Palæarctic, and many of them Madeiran. The peculiar genera have also nearly all strong affinities with Palæarctic genera. Just as the whole facies of the Madeiran Hemiptera is European, so that of the St.-Helenian is Madeiran and European.

The characteristics of the Arachnida and of the terrestrial Mollusca have already been pointed out.

But let us now see if there be any thing in the manner of life of the aboriginal animals of St. Helena which would make their passage across the sea not only a possible but a probable occurrence. If we can find that a majority of them are connected with plants, it is not difficult to imagine how they might have been drifted by sea-currents to the island; but if, in addition, it turned out that many inhabited the interior parts of plants, their carriage across the sea would pass from the region of possibility into that of probability. Mr. Wollaston has carefully recorded the *modus vivendi* of the St.-Helenian Coleoptera; so we will try and prove our case from his evidence.

At least half of the 12 endemic species of the genus *Bembidium* have the very abnormal habit, for that genus, of living *within* the dead and rotting stems of the tree ferns. (I may note here that in the Madeiran group 10, in the Canaries 14 (7 peculiar), and in the Cape-Verds 5 species of the genus have been found.) The following St.-Helenian genera are also, amongst others, especially

<sup>1</sup> Trans. Entom. Soc. London, 1873, iv. p. 433.

wood-frequenting—*Anchastus*, *Anobium*, the 17 genera of *Cossonidæ*, *Nesiotes*, &c.

Thus 16 out of the 25 peculiar genera, and nearly 80, at least, out of the 129 peculiar species, live in wood at some period of their existence. The *Anthribidæ*, of which 26 species occur in St. Helena, are not wood-borers, although probably lignivorous as larvæ, but cling rather tenaciously to foliage, dead wood, &c. ; and they, as well as most of the remaining Coleoptera as well as the species of the other groups which are also attached to plants, must be specially liable to transportation in or about drift-wood, &c. In the case of winged species the winds, of course, would assist in the work.

But it is unnecessary to pursue this subject any further, save to mention that though most of the plant-frequenting beetles are attached to some one or other of the peculiar plants, it by no means follows that their ancestors were so restricted ; for, as observed by Mr. Wollaston, some at the present day devour with apparently equal relish, the native arborescent Compositæ and the introduced Coniferæ. Nor is it necessary to suppose that they were introduced with the tree Compositæ, because it is probable that the progenitors of the latter were not arborescent when they arrived in the island, but that that condition was gradually evolved<sup>1</sup>. Some of the *Cossonidæ* are quite content with the pithy stems of thistles &c., though the family is essentially wood-loving.

It is also worth while noting the extreme paucity of that section of the Coleoptera known as the *Phytophaga*, which seems to show not only that the lignivorous beetles had more facilities of transport than those that merely fed upon the leaves of plants, but that, as Mr. Wollaston remarks, the early flora of St. Helena was essentially a woody one. Now that the forest has vanished, and though the greater part of the island is suited for the *Phytophaga*, yet the number of species remains the same—showing, I think, that colonization (apart from that brought about by man's unintentional agency) is not now going on.

A word now as to the flora. The aboriginal plants have, as has been already said, most affinity with the flora of Southern extra-tropical Africa. This affinity can surely only arise from a common origin ; and if, as I have attempted to prove, the origin of the fauna is Palæarctic, it seems reasonable to suppose that the origin of the flora is the same, and that the same agencies which brought its fauna to St. Helena brought its flora also. Without going into details of the South-African flora (for which, indeed, I have not the materials), I may mention that there are one or two genera of plants common to it and to St. Helena which are strongly suggestive of a Palæarctic origin and dispersion by the influence of a glacial epoch :—for example, *Sium*, which has an endemic representative in St. Helena ; the very characteristic Cape genus *Pelargonium*, which has a straggler in Syria (where, be it noted, the endemic St.-Helenian colcopterous genus *Haplothorax* has, according to Lacordaire, its nearest allies) ; and others.

<sup>1</sup> Darwin, *l. c.* p. 350.



Here I may be permitted to quote a remark by Mr. Darwin on this point<sup>1</sup>:—"In Africa, several forms characteristic of Europe and some few representatives of the flora of the Cape of Good Hope occur on the mountains of Abyssinia. At the Cape of Good Hope a very few European species, believed not to have been introduced by man, and on the mountains several representative European forms are found which have not been discovered in the intertropical parts of Africa. Dr. Hooker has also lately shown that several of the plants living on the upper parts of the lofty island of Fernando Po and on the neighbouring Cameroon Mountains, in the Gulf of Guinea, are closely related to those on the mountains of Abyssinia, and likewise to those of Temperate Europe. It now also appears, as I hear from Dr. Hooker, that some of these same temperate plants have been discovered by the Rev. R. T. Lowe on the mountains of the Cape-Verde Islands. This extension of the same temperate forms, almost under the equator, across the whole continent of Africa and to the mountains of the Cape-Verde archipelago, is one of the most astonishing facts ever recorded in the distribution of plants"<sup>2</sup>. Mr. Darwin then proceeds to show how in a glacial epoch the temperate flora might have invaded the whole of Africa, and at the return of warmer conditions been driven up the mountains, or in some cases become gradually acclimatized.

In connexion with this possible, and, as it seems to me, probable, community of origin of the floras of the Cape (in part) and of St. Helena, the significance of the occurrence at the former place of several Coleoptera and Hemiptera closely allied to, if not identical with, St.-Helenian species, is not to be overlooked<sup>3</sup>.

It is not to be wondered at, then, that we do not find, in the parts of Africa nearest St. Helena, much, if any, relationship to the island fauna and flora. That such relationship, so far as community of origin is concerned, once existed, I have little doubt; but the return to tropical conditions and the reestablishment of the tropical fauna and flora have obliterated, except on the mountain-summits, all traces. And St. Helena by its isolated position and temperate climate (the mean temperature of the year being only about 61°) is to all purposes a mountain.

The affinity of the Hemipterous genus *Megarhaphis* to the African *Macrorhaphis* (of which one species is from the Cape, and the other—rather doubtful as to the genus—is from the Congo) seems to be an exception; but as we do not know the exact nature of the locality whence the Congo species was derived, and as it is as likely as not to be a mountain and not a tropical insect, it may after all prove our case by being a descendant of one and the same Palæarctic ancestor as the Cape and St.-Helenian species.

There still remain some elements in the fauna and flora of St. Helena to be accounted for.

<sup>1</sup> Origin of Species, p. 337.

<sup>2</sup> See also Professor Oliver's 'Flora of Tropical Africa,' in which the occurrence of several species, not only European but even Arctic, is recorded.

<sup>3</sup> Certain European Hemiptera are also natives of the Cape.

For example, there is the one peculiar land-bird, *Ægialites sanctæ-helenæ*, which is so closely allied to African species that it is, in all probability, a comparatively recent introduction. It seems rather remarkable that there are not more peculiar land-birds; and the absence of Bats (none of which are recorded by Mr. Melliss) is another curious feature in the fauna of the island.

There are also the species of West-Indian fish and marine Mollusca as well as the Indian-Ocean species of the same groups. Not very much can be made out of our present knowledge of these; but it seems to me that no great obstacle exists to their introduction by means of the ocean currents. The present currents might have brought the southern and eastern species, while the reversal of the currents during a glacial period would bring the West-Indian and Brazilian animals. Though I have already invoked the agency of a reversed current for the purpose of bringing the Palæarctic fauna to the island, I think it is improbable that the arrival of the West-Indian fish at St. Helena was contemporaneous with that of the ancestors of the endemic fauna, though, in the case of some of them, it is quite possible. I would rather suppose that, since they are species of presumably later origin (or, should their origin be as remote as that of the endemic species, yet it was elsewhere than at St. Helena), they were brought to the island during a later (or a later part of the last) glacial period than the ancestors of the endemic species.

There are also certain elements in the flora, viz. the five tropical weeds or sea-side plants of very wide distribution, which Sir. J. Hooker refers to. These are almost certainly of later introduction than the endemic and peculiar flora. Mr. Melliss remarks<sup>1</sup> of *Entada scandens*, L., that the large seeds "are cast ashore on the windward side of the island, having been brought from the Mauritius, or elsewhere, by sea-currents. They have been *known to germinate*; but it is doubtful if one now exists there." This fact is suggestive of the origin of the five plants alluded to, as well as of some others thought by Mr. Melliss to be indigenous.

## Part II. DESCRIPTIVE.

In his recent work upon St. Helena, Mr. Melliss was able to record the occurrence of only 8 species of Hemiptera. The names of only five species had apparently been determined; and of these 4 were evident introductions.

It was therefore left to Mr. Wollaston to add considerably to our knowledge of the St.-Helenian species of this order. The list which I now submit to the Society embraces the results of his six months' exploration of the island; and though it probably does not include all the native species, yet there is reason to suppose that the collection is a very representative one.

A few months before his lamented death, Mr. Wollaston placed the collection in my hands for determination, with directions that a

<sup>1</sup> *L. c.* p. 266.



“set of types” should be placed in the British Museum, and that the new species should be described in a single paper and not piecemeal. The first of these requests I have already carried out; and the second I now proceed to fulfil. The type specimens of *all* the new species, as well as a larger number of specimens in cases where the species was represented by more than two individuals, will be found in the British Museum.

The following is a list of the species in the collection:—

## Order HEMIPTERA.

### Suborder HETEROPTERA.

#### Fam. CIMICINA, Stål.

##### Subfam. ASOPINA, Stål.

1. *Megarhaphis wollastoni*, Buchanan White.

##### Subfam. PENTATOMINA, Stål.

2. *Nezara viridula*, L.

#### Fam. LYGÆIDÆ, Stål.

##### Subfam. BERYTINA, Stål.

3. *Metacanthus concolor*, Buchanan White.

##### Subfam. LYGÆINA, Stål.

##### Div. ORSILLARIA, Stål.

4. *Nysius sanctæ-helenæ*, Buchanan White.
5. *Nysius thymi*, Wolff, var.

#### Fam. CIMICIDÆ, Stål.

##### Subfam. ANTHOCORINA, Reut.

##### Div. ANTHOCORARIA, Reut.

6. *Hapa contorta*, Buchanan White.
7. *Cardiastethus bicolor*, Buchanan White.
8. *Lyctocoris campestris*, F.

##### Div. MICROPHYSARIA, Reut.

9. *Myrmedobia fuliginea*, Buchanan White.

##### Subfam. CAPSINA, Reut.

##### Div. PHYTCORARIA, Reut.

10. *Calocoris* (*Megacælum*) *lustratus*, Buchanan White.

##### Div. CYLLOCORARIA, Reut.

11. *Orthotylus mutabilis*, Buchanan White.

##### Div. CAPSARIA, Reut.

12. *Lygus apicalis*, Meyer.

## DIV. PLAGIOGNATHARIA, Reut.

- 13. *Agrametra æthiops*, Buchanan White.
- 14. *Psallus flavosparsus*, Buchanan White.
- 15. *Psallus lutosus*, Buchanan White.
- 16. *Psallus vinaceus*, Buchanan White.

## Fam. NABIDÆ, Stål.

## Subfam. NABINA (= CORISCINA, Stål).

- 17. *Nabis capsiformis*, Germ.
- 18. *Vernonia wollastoniana*, Buchanan White.

## Fam. SALDIDÆ.

- 19. *Salda aberrans*, Buchanan White.

## Suborder HOMOPTERA.

## Fam. FULGORINA.

## Subfam. ISSINI.

- 20. *Issus coleoptratus*, F.

## Subfam. DELPHACINI.

- 21. *Liburnia (Ilburnia) ignobilis*, Buchanan White.

## Fam. JASSINA.

## Subfam. BYTHOSCOPINI.

- 22. *Stonasia undulata*, Buchanan White.
- 23. *Stonasia consors*, Buchanan White.
- 24. *Nehela vulturina*, Buchanan White.

## Subfam. ACOCEPHALINI.

- 25. *Argaterma alticola*, Buchanan White.
- 26. *Argaterma multisignata*, Buchanan White.

## Subfam. JASSINI.

- 27. *Grypotes* (?) *insularis*, Buchanan White.
- 28. *Thamnotettix sanctæ-helenæ*, Buchanan White.
- 29. *Jassus wollastoni*, Buchanan White.

## Subfam. TYPHLOCYBINI.

- 30. *Chlorita edithæ*, Buchanan White.

There were besides in the collection several species in immature condition and hence undeterminable. One of these species, which is a native of the high central ridge, appears to belong to the Coreini; and any future explorer of the island would do well to search for it. To the list must also be added *Acanthia lectularia*, L., a doubtless introduced species recorded by Mr. Melliss, and *Cixius sanctæ-helenæ*, Stål (Eugenies Resa, Entomol. Bidr. 272. 148), a probably endemic species. Mr. Melliss also mentions the occurrence of several

*Aphides* and *Cocci*. Of the 30 determinable species in Mr. Wollaston's collection 5 species—

*Nezara viridula*, L.,  
*Lyctocoris campestris*, F.,  
*Lygus apicalis*, Meyer,

*Nabis capsiformis*, Germ.,  
 and  
*Issus coleoptratus*, F.,

have been probably introduced since the island was discovered. The species which I have referred to *Nysius thymi*, Wolff, may also be an introduction; but I am more inclined to consider it a native.

The remaining 24 species seem to be all peculiar to the island; and for the reception of 10 of them I have been obliged to create 7 new genera and 1 new subgenus. Mr. Wollaston has not, unfortunately, recorded for the Hemiptera, as he has done for the Coleoptera, the special *modus vivendi* of each species; but as the particular part of the island inhabited by each was briefly noted by him, I have been careful to give all the information I can.

#### MEGARHAPHIS, gen. nov.

*Genus Macrorhaphidi valde affine. Caput apice subtruncatum, lobis æquilongis. Rostrum articulo 2° 4°que subæquilongis, singulatim 3° longioribus. Thorax marginibus lateralibus subcallosis, vix transversim rugosus. Scutellum parte apicali retrorsum angustata, frenis ultra medium scutelli continuatis. Carina mesosternalis mediocris, nec lata nec sulcata. Venter spina basali longa compressa armatus, apud marem maculis sericeis haud instructus. Femora antica subtus apicem versus spina parva armata. Tibiæ anticæ vix dilatatæ. Membrana costis 8 instructa.*

There is no doubt that *Megarhaphis* is closely allied to Dallas's genus *Macrorhaphis*; but it seems to me that the characters pointed out above are of importance sufficient to necessitate the creation of a new genus for the species described below. The difference in the comparative proportions of the joints of the rostrum, the narrow and unfurrowed keel of the mesosternum, the absence of the two silky spots on the venter of the male, and other points will at once distinguish *Megarhaphis* from *Macrorhaphis*.

#### 1. MEGARHAPHIS WOLLASTONI, sp. n.

*M. elongata, rufo-brunnea, rude et dense nigro-punctata; thoracis angulis lateralibus prominulis obtusiusculis; pedibus corpore concoloribus; antennis paullo pallidioribus; capitis lineis 2 longitudinalibus ocellos includentibus, marginibus tyli, vitta centrali capitis subtus sternique, maculis marginalibus dorsi abdominis, nebulisque ventris nigris; spina basali ventrali ad apicem testacea; membrana brunneo-fusca. Capitis lineis 2 longitudinalibus inter ocellos ad apicem currentibus, margine interiore orbitæ, tyloque, pronoti callis irregularibus prope marginem anticum, necnon carina longitudinali angusta, scutelli linea apicali longitudinali subelevata, corii spatii irregularibus (una ad medium, altera prope apicem), haud vel vix punctatis; sterno ventrique minus dense*

*punctatis, carina ventrali lævigata; scutello fovea parva sed profunda utrinque ad basin prope pronoti angulos posticos sat productos instructo.*

♂. Long. 13, lat. 6 m. m.

*Hab.* "West Lodge" (exemplar unicum).

*M. wollastoni* agrees in many points of sculpture &c. with the description of *Macrorhaphis* (?) *acuta*, Dall. (List, i. 88. 2), from Congo, which species may perhaps pertain to the genus *Megarrhaphis*.

## 2. NEZARA VIRIDULA, L.

Two examples without note of locality. This almost worldwide species is probably an introduction.

## 3. METACANTHUS CONCOLOR, sp. n.

*M. ochraceus; antennarum articulo 1° annulis, uno prope basin, altero sat lato ad apicem, articulo ultimo (apice excepto), rostro ad apicem, oculis, scutello (basi spinaque exceptis), femorum tibiarumque apicibus tarsisque necnon corii marginibus angustissime exteriore et interiore apicali plus minus piceis aut piceo-nigris; capitis vertice linea elevata longitudinali instructo; pronoti lobo antico rude punctato, sulco sat profundo inter lobos callis 3 irregularibus instructo, lobo posteriore postice valde elevato et longitudinaliter carinato; mesosterni spina laterali longissima, primum recta, deinde retro curvata.*

♂. Long. 5 m. m.

*Hab.* ad "The Barn," ubi *Aster glutinosus* (Roxb.) (anglice "Scrubwood") occurrit.

I have seen only one specimen.

## 4. NYSIUS SANCTÆ-HELENÆ, sp. n.

*N. oblongus, ochraceus, setulis brevibus concoloribus vestitus; antennis, rostro, capite, pronoti impressione lineari transversa anteriore, scutelli basi sternoque plus minus rufo-brunneis; antennis articulo 4° basi excepto, rostro ad apicem, capite vitta utrinque inter oculos, punctis pronoti maculisque utrinque ante marginem posticum, scutelli punctis, costis et maculis clavo dissecorarii, hujus margine apicali plus minus interrupte, membrana maculis irregularibus, femoribus maculis, apice tarsorum, sterno ad medium, necnon maculis ventris nigris vel fusco-nigris. Bucculis basin capitis vix attingentibus, pone medium retrorsum sensim humilioribus; articulo 1° rostri pone bucculas extenso et basin capitis attingente; capite cum oculis quam apæ pronoti latiore; antennarum articulo 2° quam 3<sup>us</sup> longiore; pronoto et scutello (illius basi excavata excepta) carina levissima instructis; mesosterno distincte sulcato; margine costali corii antice recto, dein rotundato-ampliato.*

♂ ♀. Long.  $5\frac{1}{2}$ – $6\frac{1}{2}$ , lat.  $2$ – $2\frac{1}{2}$  m. m.

*Hab.* in intermediis editionibusque insulæ—"Plantation," "West Lodge," "Luffkins," et ad "Diana's Peak."

*Nysius sanctæ-helenæ* varies considerably both in the number and intensity of the darker markings. Sometimes the whole of the clavus and disk of the corium are fuscous with pale spots, and the apical margin entirely infuscated; but the widened anterior margin of the corium is almost always immaculate, except that sometimes there is a dark streak near the apical margin.

This species belongs to the section *aa* of the genus *Nysius* in Stål's 'Enumeratio;' but it does not appear to be very closely allied to any of the species therein placed.

#### 5. *NYSIUS THYMI*, Wolff.

*Hab.* in intermediis editoribusque insulæ—"Plantation," "West Lodge," et ad "Diana's Peak."

I cannot find any points of distinction between British and St.-Helena specimens of this common and variable European species, except that the latter seem to be rather smaller and to have more slender antennæ and legs.

It does not appear to have been previously found out of Europe.

#### HAPA, gen. nov.

*Corpus oblongo-ovatum, parce hirsutum. Caput sulca transversa curvata inter oculos antè præditum, inter oculos latum, modice productum, collari mediocri instructum, pone oculos læve nitidumque. Antennæ pilosæ, articulo 1º apicem capitis superante, 2º sursum leviter incrassato, 3º 4ºque filiformibus. Rostrum medium mesosterni attingens, articulo 1º oculos attingente. Pronotum haud vel obsoletissimo collari instructum, transversum, apice truncato, basi levissime concava, angulis anticis rotundatis et maxime depressis, lateribus acutis; discus antè convexo transverse rugosus, postè depressus et leviter concavus ante angulos posticos, ad medium sulco longitudinali plus minus obsoleto instructus. Scutellum anguste transversum, ad basin convexum concavum ad marginem utrinq. pone basin, apice leviter acuminato, disco leviter concavo et leviter longitudinaliter rugoso. Elytra macropterorum apicem abdominis paullo superantia et membrana obsolete 3-venosa. Elytra sæpius tantum dimidio abdominis æquilonga, membrana haud instructa. Femora antica maris reliquis crassiora; tibiæ anticæ apicem versus distincte incrassatæ, margine inferiore serie brevissimarum spinularum instructo; tibiæ posticæ spinis nonnullis setiformibus instructæ. Pedes feminae graciliores, tibiis anticis haud incrassatis nec ut in ♂ formatis. Quartum et sequentia segmenta abdominis maris sinistrorsum asymmetrica, supra 4º, 5º 6ºque abdominalibus et 1º genitali segmentis sinistrorsum maxime abbreviatis; segmento 1º genitali fere contecto ad marginem sinistrum; segmento genitali ultimo (ut videtur) triangulari, levitur sinistrorsum contorto, latere sinistro foramine calloso-marginato (quod fere æquilongum est ac segmentum), instructo. Quarti segmenti abdominis subtus margo posticus ad latus sinistrum profunde sinuatum. Abdomen feminae symmetricum. Apex abdominis ♂ et ♀ pilis nonnullis longis apicem versus instructus.*



Genus *Piezostetho* affine.

Nomen a Maori "hapa" (contortus).

*Obs.* In *Piezostethus*, to which the genus is allied, the males have also unsymmetrical hind bodies—a fact, by the way, that I do not see noticed in any of my books.

6. HAPA CONTORTA, sp. n. (Plate XXXI. fig. 1.)

*H. piceo-nigra, pilis brunneis vestita; capitis apice, antennis, pronoti margine postico, elytris, pedibus abdomineque plus minus piceo-brunneis; rostro, antennarum articulis duobus ultimis, cuneo ad basin, trochanteribus, femoribus ad basin, tibiis ad basin apicemque et tarsis plus minus dilutioribus; abdomine obscuriore variegato. Macropteronum clavi disco, corii margine antico basin versus, et macula ad medium basale membranæ paullo dilutioribus; membrana fusco-luteo-brunnea, venis obscurioribus.*

♂ ♀. Long. 3–3½, lat. 1½ m. m.

*Hab.* in excelsioribus insulæ, ad "Diana's Peak."

I have seen but a single macropterous specimen, and that rather mutilated.

7. CARDIASTETHUS BICOLOR, sp. n.

*C. niger, capillis pallidissime brunneis vestitus; antennis, rostri apice, elytris pedibusque luteo-brunneis; capite nitido rufo-brunneo, clypeo dilutiore; rostro (apice excepto), antennarum articulis 2 ultimis, elytrorum suturis, margine interiore lato embolii, margine interiore discoque cunei plus minus fusco-brunneis; membrana luteo-fusca. Capite lævi; clypeo sat angusto; pronoto (callo excepto), scutello elytrisque subtiliter punctatis.*

Long. circa 2½ m. m.

*Hab.* in intermediis insulæ—"Plantation."

Rather closely allied to *C. testaceus*; but, besides differing in colour, *C. bicolor* is a narrower and more slender insect.

9. MYRMEDOBIA FULIGINEA, sp. n.

*M. atra; antennis piceis, articulo 1º dilutiore ad basin, articulo 2º ad basin medium apicemque albido, articulo ultimo ad apicem rufo-piceo; pedibus piceo-nigris, femoribus posticis ad apicem, annulis 2 ad medium tiliarum anticarum intermediarumque, et dimidio basali tarsorum omnium albidis; capite convexo; antennis subtiliter pubescentibus, articulis 2º 3ºque subæquilongis; pronoto maxime convexo, annulo male definito, sulco transversa, nullo; elytris margine antico anguste reflexo.*

♀. Long. 1 m. m.

*Hab.* locos editiores supra "West Lodge."

10. CALOCORIS (MEGACÆLUM) LUSTRATUS, sp. n.

*C. sordide stramineo-testaceus, maculis parvis fuscis rufisque remote et obscure notatus, capillis tenuibus adpressis pallido-aureis vestitus; pronoto obsoletissime punctulato; oculis, maculis parvis*

in disco et ante marginem posticum pronoti, macula geminata ad basin scutelli, dimidioque apicali femorum posticorum plus minus brunneo- vel rufo-fuscis; apicibus rostri scutellique fusco-nigris; antennarum articulo 3° ad apicem et articulo 4° toto, apice imo tibiæ anticarum, apicibusque tarsorum omnium pallide fusco-brunneis; capite, antennarum articulo 1°, dimidio apicali femorum anticorum intermediorumque, tibiis omnibus ad basin, et interdum elytris et lateribus abdominis supra subtusque, sat conferte rufo-sparsis.

♂ ♀. Long. 6, lat. 2 m. m.

*Hab.* in intermediis insulæ—"Plantation."

Sometimes the apical half of the antennæ is vinous-red in colour and the fuscous markings generally more suffused with red.

# 11. ORTHOTYLUS MUTABILIS, sp. n.

*O. pallide fusco-brunneus, capillis pallidis vestitus; pronoti margine postico elytrorumque margine exteriori anguste fusco-nigris; elytris lutescenti- vel viridescenti-fuscis; antennæ pedibusque rufo-fuscis, illarum articulis 1° ad basin, 2° ad apicem, 3° 4°que, necnon tarsorum articulo ultimo et interdum tibiis ad basin, obscurioribus; rostro ochraceo, apice fusco-nigro; membrana pallide fusca venis dilutioribus. Sat angustus, elongatus; antennæ  $\frac{4}{5}$  corporis æquilongis, articulo 3° plus dimidio 2<sup>i</sup> longiore, 4°  $\frac{1}{2}$  3<sup>i</sup> subæquilongo; rostro coxas posticas haud superante; pronoti lateribus vix sinuatis, callis parvis; scutello convexo, ante medium transverse depresso.*

♂ ♀. Long. 4 m. m.

*Hab.* editioribus insulæ—"West Lodge" et "Diana's Peak."

Very variable in the intensity of the coloration. It is allied, but not very closely, to *O. nassatus*, and belongs to the same group of the genus.

# 12. LYGUS APICALIS, Mey., Fieb.

*Hab.* in intermediis insulæ—"Plantation."

A South-European species, probably introduced into St. Helena.

## AGRAMETRA, gen. nov.

*Corpus oblongo-ovatum, sat rude punctatum, nudum. Caput nutans, latum, convexum; clypeo modice producto, compresso, a fronte parum discreto; vertice immarginato; gula brevi. Oculi oblongi, leviter granulati, pronoto contigui. Antennæ sat crassæ, ad oculorum medium internum insertæ, corporis dimidio subæquilongæ, articulo 1° crasso apicem clypei longe superante. Rostrum coxas posticas vix attingens, articulo 1° capitis basin vix superante. Pronotum trapeziforme, convexum, latitudine apicali vix longius, basi quam apice  $\frac{1}{3}$  latius, apice, lateribus et basi ante scutellum leviter sinuatis. Scutellum ad basin detectum. Hemelytra completa, corii margine exteriori ad basin subito dilatato-explanato; clavo, corio cuneoque coriaceis; membrana biareolata. Alæ hamo instructæ. Pedes sat breves; femoribus sat incrassatis; tibiis*

*modice fusco-spinulosis sed haud punctatis; tarsis posticis longioribus, articulo ultimo duobus primis simul sumptis paullo brevior.*

Generibus *Plagiognatho* et *Sthenaro* subaffinis.

13. *AGRAMETRA ÆTHIOPS*, sp. n. (Plate XXXI. fig. 2.)

*A. piceo-nigra nitida; rostro (apice excepto), coxis, femoribus, tarsorumque articulo ultimo piceo-brunneis; antennis, tibiis, tarsorumque articulis duobus primis sordide ochraceis; antennarum articulo 1° ima basi, articulo 2° ad apicem, 3° 4°que piceo-nigris, imis apicibus 2<sup>i</sup> 4<sup>i</sup>que dilutioribus; membrana fusca, venis parvæ cellulæ exterioris rufis; antennis, pedibus abdomineque capillis tenuibus pallide fuscis vestitis; antennarum articulo 1° paullo supra basin subito incrassato, vulido, cylindrico; 2° sursum sensim incrassato, quam pronoti basis brevior, 3° 4°que fusiformibus, 3°  $\frac{1}{4}$  2<sup>i</sup> paullo longiore, 4°  $\frac{2}{3}$  3<sup>i</sup> subæquilongis.*

♂ ♀. Long.  $3\frac{1}{2}$  m. m.

*Hab.* in regione *Commidendri robusti* DC. (anglice "Gumwood")  
—"Luffkins" et "Thompson's Wood."

14. *PSALLUS FLAVOSPARSUS*, sp. n.

*P. testaceus, capillis pallidissime aureis vestitus, capite thoraceque præterea pilis nigris validioribus instructis; capite, pronoto scutelloque ad basin fusco-atris indistincte nigro-guttulosis et maculis flavidis (una ad marginem interiorem oculi, una utrinque pone marginem anticam et altera in disco pronoti, necnon una distinctiore in angulis anticis scutelli) ornatis; angulis imis posticis pronoti testaceis; scutello ad apicem clavoque flavo-guttulosis, corio cuneoque flavo- et fusco-sparsis, macula orbiculari prope apicem clavi et macula irregulari oblonga ante mediam basin cunei fusco-nigris; membrana dilute fusca, iridescente, basi et fascia angusta transversa pone albas venas dilutioribus; antennis testaceis, annulo prope basin et macula ad interiorem articuli 1<sup>i</sup>, annulis basali apicalique 2<sup>i</sup>, 3° 4°que fusco-nigris; femoribus anticis et intermediis ad apicem, margine apicali antico femorum posteriorum, necnon tibiis omnibus e punctis nigris nigro-spinulosis; articulo ultimo tarsorum fusco; antennis mutilatis, sed, ut videtur, articulis 3° 4°que simul sumptis saltem 2° æquilongis.*

♀. Long. 3 m. m.

*Hab.* in regione *Commidendri robusti* DC. (anglice "Gumwood")  
—"Thompson's Wood."

15. *PSALLUS LUTOSUS*, sp. n.

*P. Sat robustus, testaceus, opacus, aureo-pubescent, rufescenti-brunneo dense irroratus; signaturis obscuris plus minus confluentibus, præsertim in parte antica pronoti, medio apiceque scutelli, apicibus clavi coriique necnon femoribus; antennis rufo-brunneis, articulo 1° ad apicem testaceo, articulo 2° ad basin apicemque et articulis duobus ultimis fusco-brunneis; tibiis testaceis, annulis*

*plurimis angustis rufescenti-brunneis notatis et e punctis nigris nigro-spinulosis; membrana fusca pallide transverso-fasciata, venis albidis. Antennarum articulis 2 ultimis simul sumptis 2° brevioribus, 4°  $\frac{1}{2}$  3<sup>i</sup> subæquilongis.*

Long. 4, lat. 2 m. m.

*Hab.* in regione *Commidendri robusti* DC., ad "Peak Gut."

16. *PSALLUS VINACEUS*, sp. n.

*P. gracilis, obscure vinaceus, nitidus, capillis pallidis sublongis vestitus; antennarum articulo 1° et 2° ad apicem, rostro, scutello ad apicem, clavi disco, guttulis in disco corii, sutura inter corium cuneumque, cuneo ad apicem, femoribus ad apicem, tibiis tarsisque plus minus testaceis vel vinaceo-testaceis; clavi parte pallida, femoribus posticis ad apicem et tibiis posticis plus minus vinaceo maculatis; apicibus rostri tarsorumque necnon membrana fuscis, hac basi et fascia transversa pone cellulas dilutioribus, venis albidis, venis cellulæ exterioris interdum rufis; tibiis e punctis nigris nigro-spinulosis. Antennarum articulis 2 ultimis simul sumptis 2° æquilongis, 4° quam dimidium 3<sup>i</sup> brevior.*

♂ ♀. Long. 3–3 $\frac{1}{2}$ , lat. 1 $\frac{3}{4}$  m. m.

*Hab.* in editioribus insulæ, ad "Diana's Peak."

Very like a small dark form of *Psallus lutosus*, but distinguished by its slenderer and more shining form, longer and less golden pubescence, more slender legs and antennæ, the more uniform darker markings, and more convex pronotum with less concave hind margin.

17. *NABIS CAPSIFORMIS*, Germ.

*Hab.* in intermediis insulæ, ad "Plantation."

An African and American species, possibly (probably?) introduced.

*VERNONIA*, gen. nov.

*Corpus elongatum. Caput ante oculos oblongo-productum, parte anteculari parti postoculari subæquali; clypeo distinctissime convexo-elevato, angusto, jugis depresso-rotundatis, medium versus constrictis, ad apicem leviter incrassatis. Oculi sat magni. Ocelli desunt. Rostrum 4-articulatum, coxas posticas attingens, gracile, articulo 1° brevi, duplo longiore quam latiore, 2° 3°que longis, subæqualibus. Antennæ setaceæ, gracillimæ, corpore  $\frac{1}{4}$  longiores, articulo 1° quam caput  $\frac{1}{4}$  longiore, 2° quam primus  $\frac{1}{4}$  longiore, 3° 2° æquilongo, 4° brevissimo. Pronoti lobus anticus lobo postico angustior; lobus posticus lateribus subparallelis obtuse et callose marginatis instructus, ante marginem posticum truncatum leviter transverse sulcatus. Scutellum latius quam longius, ad basin transverse modice elevatum. Elytra abbreviata, scutello tantum duplo longiora, ad apicem rotundata, coriacea, marginata. Acetabula antica postice aperta, a basi prostethii excisa; mesosternum carina, pone medium distinctissima, instructum; orificia subobscura ante coxas posticas sita. Pedes gracillimi et longissimi; coxæ longiusculæ; tibiæ anticæ seriebus duabus, tibiæ*



*intermediæ serie unica, dentium nigrorum tenuissimorum instructæ; femora antica modice incrassata, deorsum sensim angustata, tibiis paullo longiora; tibiæ omnes ad apicem leviter incrassatæ; pedes postici longissimi; femora postica ad apicem modice incrassata; tarsi omnes sat longi, articulo 1° brevissimo, duobus ultimis subæquilongis. Abdomen elongato-ovale, connexivo dilatato ad segmenta 3<sup>um</sup> 4<sup>um</sup>que latissimo, illinc apicem basinque versus sensim angustato.*

Genus *Arbelæ* affine, memoriæ viri celeberrimi beati Thomas Vernon Wollaston dicatum.

18. *VERNONIA WOLLASTONIANA*, sp. n. (Plate XXXI. fig. 3.)

*V. rufo-brunnea* (♂) *vel rufo-lutea* (♀) *rufo-sanguineo variegata; capitis parte anteoculari, antennis pedibusque pilis brevibus pallide brunneis vestitis; antennarum articulo 1° rufescente annulis latis obscurioribus, ad apicem basinque distinctionibus, ornato; articulo 2° flavescente annulis 5 vel 6 fuscis, quarum 3 in dimidio basali et ad apicem distinctiores sunt, instructo, 3° 4°que fusco-brunneis obscure annulatis; pedibus plus minus distincte fusco vel rufo fusco-annulatis, ad basin testaceis; abdomine supra sanguineo-variegata, subtus testacea vitta angusta centrali et vitta latiore laterali utrinque ornata; abdominis segmento 6° ad medium supra subtusque sinuato.*

♂ *Segmento genitali quadrato, ad apicem truncato.*

♂ ♀. Long. 10–12, lat. pronoti  $1\frac{1}{2}$ – $1\frac{3}{4}$ ; abdominis ♂  $2\frac{1}{2}$ , ♀ 4 m. m.

*Habitat in excelsioribus centralibus insulæ, inter Compositas arborescentes.*

19. *SALDA ABERRANS*, sp. n. (Plate XXXI. fig. 4.)

*S. obovata, atra, opaca, pilis brevibus erectis nigris, aliis depressis aureis intermixtis, vestita; antennarum articulo basilari (apice excepto), clypeo nitido, rostro, callo utrinque ad medium interne oculorum, pronoti marginibus lateralibus anguste, marginibus exterioribus interioribusque (illo basin versus latiore dilutioreque) elytrorum, necnon maculis nonnullis irregularibus corii pedumque brunneis vel pallide piceo-brunneis; clavi maculis triangularibus, una pone medium, duabus prope apicem, linea ante medium suturæ clavalis, corii maculis 5 propemarginem anticum et nonnullis in disco albidis; tibiis ad apicem anguste pallidis, apice imo et articulo ultimo tarsorum piceo-nigris; unguiculis piceo-brunneis. Late obovata, pone medium latior; capite cum oculis quam pronoti apex latiore; vertice ante ocellos foveolato, margine antico subobtusè incrassato; antennis vix incrassatis; rostro longo, coras posticas attingente; pronoti margine postico quam margo anticus duplo latiore, marginibus lateralibus anguste reflexis; callo antico magno, sulco profundo longitudinaliter diviso, pone callum sulco angusto profundo fovea obliqua ad angulum posticum currente utrinque conjuncto; scutello convexo, ad medium semicirculariter transverse sulcato; elytris totis coriaceis convexis, margine antico rotundato.*

*et reflexo præcipue ad basin, margine interiore pone apicem scutelli recto, margini elytri alterius haud incumbente; (membrana alæque desunt;) pedibus modicis, tibiis ad apicem subincrassatis; tarsorum articulo 1º brevi, articulo ultimo longissimo.*

♂ ♀. Long 3-5, lat. (pone medium) 2-3 m. m.

*Hab.* in editoribus insulæ, juxta "Diana's Peak."

The absence of the membrane prevents me referring this to any of the sections given by Dr. Stål in his 'Enumeratio.' It may perhaps belong to a new genus; but as it has all the facies of a *Salda*, I have placed it in that genus.

*S. aberrans* is very variable in the intensity of the brown markings. Frequently the corium is more or less of a rich fulvous brown with anastomosing black lines; the whitish spots also vary in intensity. There is, moreover, a considerable range of variation in the size of the animal.

## 20. ISSUS COLEOPTRATUS, F.

*Hab.* intermedis insulæ, ad "Plantation."

A common European species, and doubtless introduced into St. Helena.

## LIBURNIA, Stål.

### ILBURNIA, subgen. nov.

*Antennarum articulus primus articulo secundo æquilongus vel paullo longior. Tibia postica tarso postico parte quarta longior.*

## 21. LIBURNIA (ILBURNIA) IGNOBILIS, sp. n.

*L. testaceo-brunnea; fronte distincte, clypeo, pronoto scutelloque obsolete (carinis exceptis), sterni maculis nonnullis abdomineque plus minus brunneis; dorso abdominis utrinque vitta longitudinali pallida, in segmentis 1º ad apicem, 2º et 3º ad basin distinctiore, et in segmentis 1º, 4º, 5º, 6ºque interne magis, externe minus brunneo-marginata; connexivo brunneo, angulis exterioribus apicalibus pallidis; tarsorum unguiculis piceo-nigris; elytris subhyalinis, concoloribus, vix dimidium abdominis tegentibus; oculis subrufis; capite desuper viso et pronoto longitudine subæqualibus, illo inter oculos breviter prominulo, vertice singulo oculo subæquilato; carinis omnibus discretis; fronte longa, deorsum dilatata, carina centrali ad verticem brevissime furcata; clypei carina centrali obsoleta; pronoto scutelloque distinctissime carinatis, illius carinis lateralibus obliquis rectis marginem posticum attingentibus; alis abbreviatis.*

♀. Long. 5, lat. 2 m. m.

*Habitat* in excelsioribus insulæ, ad "Diana's Peak."

*Ilburnia* diverges from the characters of *Liburnia* by the longer first joint of the antennæ, and the shorter hind tarsus. In the collection are two other Homoptera belonging to this family: one, which is much broken, is perhaps the ♂ of the above; and the other seems to be an immature *Stiroma*?

## STONASLA, gen. nov.

*Corpus cylindricum, elongatum. Caput obtusissimum, latum, thoraci æquilatum seu paullo latius, desuper visum brevissimum, subangulato-arcuatum, vertice maximam ad partem declivi; facie dilatata, transversa, fere subquadrata; apice obtusissime angulato; marginibus lateralibus ante oculos distinctissime sinuatis, dein valde rotundato-dilatatis; plica supraantennali valde obliqua, oculos haud attingente. Ocelli inter oculos in parte antrorsum vergente verticis positi, ab oculis remoti, sed inter se quam ab oculis longius distantes. Pronotum transversum, sat longum, antice subangulato-rotundatum. Scutellum mediocre, latius quam longius. Elytra alæque apicem abdominis longe superantia. Elytra pone clavum angustissime marginata. Venæ elytrorum alarumque fere ut in Bythoscopo formatæ; membranæ cellulæ apicales 4. Alæ ante apicem emarginatæ. Tibiæ posticæ spinosissimæ.*

Genus *Bythoscopo* affine, forma faciei &c. divergens. [Typus *S. undulata*.]

## 22. STONASLA UNDULATA, sp. n. (Plate XXXI. fig. 5.)

*St. sordide virescenti-flavescent, subopaca; capitis macula parva irregulari inter oculos et ocellos (necnon interdum macula inter ocellos, maculaque utrinque in margine postico pone ocellos), fovea utrinque ante antennis, parte antica suturæ frontalis, et basi (media et lateribus prope basin clypei exceptis), pronoti macula parva utrinque ad marginem anticum, scutelli basi centrali anguste, macula triangulari utrinque prope angulos basales, maculis parvis rotundis in disco, sulco transversali ad medium angustissime, necnon apice imo, elytrorum venarum punctis irregularibus subconfluentibus et lineis dentato-fractis inter venas (membranæ exceptis), alarum venis, sterno (lateribus exceptis), macula ad apicem superiorem femorum omnium, tibiarum posticarum margine exteriori superiore, unguiculisque necnon abdomine brunneo-nigris; oculis, ocellis, frontis serie linearum irregularium transversarum utrinque, femorum maculis irregularibus, et tarsis anticis intermediisque plus minus brunneis; alis infuscat. Elytris oblongo-lanceolatis.*

♂ ♀. Long. 8-9½, lat. 3-3½ m. m.

*Hab.* in editioribus insulæ, ad "Cason's."

## 23. STONASLA CONSORS, sp. n.

*St. testaceo-brunnea, opaca, elytra subopaca; capitis macula rotunda pone ocellos et prope marginem posticum, fovea ante antennis, frontis sutura antice, basi (media excepta) et lateribus prope basin clypei, necnon serie utrinque lineolarum transversarum, pronoti linea longitudinali centrali nec apicem nec basin attingente, macula parva utrinque prope marginem anticum et macula majore utrinque in disco, scutellum acula parva ad medium basim et macula triangulari prope angulos basales necnon sulco transverso angustissime, clavi venis irregulariter, corii venis distincte, femorum intermediorum posticorumque macula superiore apicali, unguiculis*

*et abdomine subtus brunneo-nigris; scutelli dimidio apicali testaceo-flavido; oculis ocellisque brunneis.*

♂ ♀. Long.  $7\frac{1}{2}$ –9, lat.  $2\frac{1}{2}$ –3 m. m.

*Hab.* in editoribus insulæ, ad “Diana’s Peak” et “Halley’s Mount.”

In addition to the differences of coloration, this species may be distinguished from the last by the internal sector of the elytra having three cells exteriorly between the base of the elytron and the apex of the clavus instead of two, as well as by the somewhat smaller stature.

#### NEHELA, gen. nov.

*Corpus cylindricum, elongatum. Caput obtusissimum, latum, thoraci æquilatum, desuper visum brevissimum angulato-arcuatum; vertice magnam ad partem declivi; facie dilatata, subtriangulari, apice producto, lateribus ante oculos late sinuatis, dein leviter rotundatis; plica supraantennali valde obliqua, oculos fere attingente. Ocelli inter oculos in parte antrorsum vergente verticis positi, ab oculis et inter se fere æquidistantes. Clypeus distincte productus, sulco inter basin et frontis apicem haud instructus. Pronotum transversum, sat longum, antice subangulato-rotundatum. Scutellum mediocre, latius quam longius. Elytra apicem abdominis superantia, pone clavum anguste marginata. Elytrorum alarumque venæ ut in Stonaslæ formatæ. Tibiæ posticæ spinosissimæ.*

Genus *Stonaslæ* valde affine, forma faciei, situ ocellorum, et clypeo distinctius producto divergens.

#### 24. NEHELA VULTURINA, sp. n. (Plate XXXI. fig. 6.)

*N. atra, opaca; capitis vertice (maculis parvis 2 ad ocellos et 4 ad marginem posticum exceptis), oculis, macula triangulari in medio frontis, antennis et lateribus, pronoti marginibus lateralibus interne angulatis, margine postico et maculis 2 parvis in disco (interdum obsoletis), scutelli macula utrinque ad marginem ante apicem, elytrorum (clavo excepto) lineolis longitudinalibus latis inter venas, necnon marginibus antico interioreque corii, pedibus anticis intermediisque (unguiculis exceptis), coxis posticis, femoribus posticis ad apicem, tibiæ posticarum basi spinisque et articulis 2 primis tarsorum posticorum testaceo-brunneis.*

♂ ♀. Long. 7– $7\frac{1}{2}$ , lat. 2– $2\frac{1}{2}$  m. m.

*Hab.* in excelsioribus insulæ, ad “Diana’s Peak” et “High Peak.”

Frequently the veins of the clavus are more or less brown; and more rarely the whole of the elytra is entirely black.

#### ARGATERMA, gen. nov.

*Corpus oblongum, paullo depressum. Caput breve, pronoto paullo brevior et latior, margine antico acuto; vertice inter oculos quam singulus oculus duplo latior, horizontali, concavo præsertim antice, margine antico arcuato, acuto, inter ocellos angustissime reflexo. Ocelli in margine antico prope oculos positi. Facies convexa, dilatata, subquadrata, apice obtusissime rotundato, lateribus ante oculos sinuatis, dein leviter rotundatis; sutura frontali ocellos attingente. Pronotum transversum, antice arcuatum, inter oculos*



*prominulum, postice truncatum. Scutellum transversum, latius quam longius. Elytra subcoriacea, tectiformia, oblonga, apicem abdominis vix superantia, areis pluribus subquadratis instructa. Alæ areis apicalibus 4 instructæ, venis in venam periphericam terminantibus, marginem haud attingentibus. Pedes mediocres, femoribus posticis paullo compressis, tibiis posticis spinosissimis, tarsis posticis articulo 1° articulis 2° una cum 3° æquilongo, articulo 2° quam 3<sup>us</sup> brevior.*

Genus *Sivæ* et *Selenocephalo* affine. [Typus *A. alticola*.]

25. ARGATERMA ALTICOLA, sp. n. (Plate XXXI. fig. 7.)

♂ *late fulvus, nitidus; verticis limbis, pronoti vitta centrali longitudinali et limbo postico, scutelli apice imo, clavi marginibus interne erosis, et fascia ante medium, corii marginibus (exteriore ad basin excepto), fascia ante medium et maculis pone medium, necnon areis apicalibus albidis; verticis marginibus imis antico posticoque, macula utrinque ad oculos posterius, maculis 4 ad marginem anticum (2 intermediis geminatis, 1 lunata utrinque pone ocellos), facie, pronoti maculis parvis 5 ad marginem posticum, sterno ad medium, corii marginibus macularum albidarum pone medium et arearum apicalium nigris; abdominis dorso nigro, segmentis 4°, 5° 6°que et ventre, necnon segmentis genitalibus et pedibus brunneo-testaceis; oculis, alis, tibiis posticarum margine postico, maculis marginis antiqui apiceque, tarsorum posticorum articularum apicibus, necnon unguiculis omnibus nigro-brunneis.*

♀ *læte fulva, verticis limbo antico, pronoti limbo postico, scutelli apice imo, elytrorum areis apicalibus flavescenti-albidis; verticis marginibus imis antico posticoque, macula utrinque ad oculos posterius, maculis 2 in disco, et 4 ad marginem anticum (2 intermediis interdum postice conjunctis, 1 lunata utrinque pone ocellos), pronoti maculis 5 ad marginem posticum, elytrorum arearum plurium parvarum subquadratarum, areolarum elongatarum pone medium, necnon arearum apicalium marginibus nigris; cetera ut in ♂.*

♂ ♀. Long.  $3\frac{1}{2}$ –5, lat.  $1\frac{1}{2}$ –2 m. m.

*Hab.* in excelsioribus insulæ, ad "Diaua's Peak."

I have seen but one ♂; and it is possibly a variety. The elytra of the ♀ have numerous black-margined cells or cell-like spots more or less variable. On the clavus and corium, to beyond the middle, these are small and vary in size, but are more or less square. Between these and the apical cells there is a transverse row of 4, more elongate, cells, of which one or more are sometimes subdivided. Beyond these are 5 marginal cells at the apex of the elytron. The veins of the elytron are scarcely distinguishable.

26. ARGATERMA MULTISIGNATA, sp. n.

*A. fulva, nitida; verticis limbo antico, pronoti margine imo postico, elytrorum areis apicalibus flavescenti-albidis; verticis marginibus imis antico posticoque, macula utrinque posterius ad oculos, maculis 2 in disco, 3 ad marginem anticum (1 in medio interdum fissa, 1*

*utrinque pone ocellos), pronoti margine antico maculis 7, 3 intermediis elongatis magnis transversis in fasciam sæpe confluentibus, disco fascia transversa abbreviata, limbo postico, necnon macula parva utrinque ad angulos laterales, scutelli macula elongata utrinque ad basin, elytrorum maculis plurimis subquadratis areiformibus, sterno abdomineque nigris; sterni lateribus, abdominis segmentis 6<sup>o</sup> et genitalibus (his nigro-signatis) pedibusque brunneo-testaceis; femoribus anticis et intermediis supra, posticis totis (basi apiceque exceptis), tibiis posticis magnam ad partem, tarsis anticis et intermediis ad apicem, posticorum apicibus articularum omnium, unguiculis oculisque nigro-brunneis; alis nigro-fuscis nigro-venosis; elytris areis apicalibus marginalibus nigro-marginatis 6 instructis.*

♂ ♀. Long. 3-4½, lat. 1½-2 m. m.

*Hab.* in excelsioribus insulæ, ad "Diana's Peak."

In stature and general colouring rather like the preceding, but distinguished at first sight by the much more numerous markings. Vertex more obtusely rounded in front and less prominent. Elytra with the veins scarcely distinguishable, covered with many somewhat square-shaped cell-like black markings, arranged in longitudinal rows. Apex of the elytron with six marginal cells, of which the first and the last are the largest. Venation of the wing different from what it is in *A. alticola*. There are four apical cells bounded by a peripheral vein as in that species; but the second cell (counting the apical as the first) is pedunculate, the peduncle joining the first and second sectors; and at the base of the fourth cell is a smaller cell formed by a transverse vein cutting off the base of the fourth cell. The venation is otherwise normal, but rather subject to variation. The elytra have sometimes obscure pale markings on the inner margin of the clavus, and vary also in the intensity of the black markings of the pronotum and scutellum.

## 27. GRYPOTES (?) INSULARIS, sp. n.

*G. aurantio-flavescens, nitidus; verticis macula subquadrata utrinque anteriùs et macula posterius prope oculos, frontis lineolis transversis in medio interruptis, clypei vitta centrali ad apicem dilatata, lororum marginibus, linea ante et macula pone antennas, maculaque ante oculos brunneis vel pallide brunneis; vertice utrinque linea obliqua brevi, pedibus maculis nonnullis, abdominis dorso, et corpore subtus maculis paucis nigris; scutello, abdominis dorsi lateribus, et corpore subtus flavescentibus; elytrorum margine antico late et venis, necnon valvulis genitalibus flavescenti-albidis; membrana dilutissime fusca.*

♂ ♀. Long. 5 m. m.

*Hab.* in editioribus insulæ, ad "West Lodge."

Perhaps scarcely correctly placed in *Grypotes*. Head, seen from above, angularly rounded and prominent between the eyes; as long as the hind margin between the eyes; broadly concave and with a fine impressed middle line; ocelli near the eyes; face very convex, and clypeus produced but scarcely curved; pronotum a little broader than